CLAIMS:

1. System for automated management of batteries, the batteries comprising at least one battery cell, the system comprising: at least one cell unit for measuring physical parameters of the at least one battery cell; a control unit; and a transmitter for transmitting the measured values of the physical parameters to the control unit via a first wireless communication link.

2. System according to claim 1, wherein the control unit comprises a control unit transmitter for transmitting control signals to the at least one cell unit via a second wireless communication link.

3. System according to claim 2, wherein a switching unit is provided; and wherein the switching unit is adapted for temporarily establishing a controllable current path between poles of the at least one battery cell.

4. System according to claim 2, wherein a battery comprises a plurality of battery cells, and wherein the switching unit is adapted to perform a charge balancing such that charging states of the plurality of battery cells adjusted to each other.

5. System according to claim 2, wherein the at least one cell unit is at least partially disposed in an interior region of the at least one battery cell for providing direct contact to an electrolyte of the at least one battery cell; and wherein the at least one cell unit is at least partially surrounded by robust and chemically resistant material.

6. System according to claim 2, comprising a communication link between the cell units for direct communication with one another.

7. System according to claim 2, wherein the at least one cell unit comprises at least one of: electric leads; a storage; and a controllable rectifier; wherein the electric leads comprise high frequency decouplers for converting high frequency electromagnetic radiation into electric energy; wherein the storage is adapted for storing electric energy; and wherein the controllable rectifier is adapted for controlling the charging of the at least one battery cell.

8. Cell unit for measuring physical parameters of battery cells, the cell unit comprising a cell unit transmitter for a transmission of the measured values of physical parameters of the battery cells via a wireless communication link.

9. Cell unit according to claim 8, wherein a switching unit is provided; and wherein the switching unit is adapted to perform a charge balancing such that the charging states of the battery cells are adjusted to each other.

10. Cell unit according to claim 9, comprising at least one of: electric leads; a storage; and a controllable rectifier; wherein the electric leads comprise high frequency decouplers for converting high frequency electromagnetic radiation into electric energy; wherein the storage is adapted for storing electric energy; and wherein the controllable rectifier is adapted for controlling the charging of the battery cells.

11. Control unit for receiving measured values of physical parameters of battery cells, the control unit comprising a control unit transmitter for transmitting control signals to a cell unit; wherein the measured values are received via a first wireless communication link; and wherein the control signals are transmitted via a second wireless communication link.

12. Control unit according to claim 11, wherein the control signals provide synchronization information to the cell unit.

13. Control unit according to claim 11, wherein the control unit addresses

each cell unit individually; wherein the control unit initiates the measurement of the physical parameters of the battery cells; wherein the control unit requests the transmission of measured values of the physical parameters.

14. Method for automated management of batteries, the batteries comprising at least one battery cell, the method comprising the steps of: measuring of physical parameters of the at least one battery cell by at least one cell unit; transmitting the measured values of the physical parameters via a first wireless communication link to a control unit.

15. Method according to claim 14, further comprising the steps of: individually controlling a charge of the at least one battery cell; transmitting individual control signals from the control unit to the at least one cell unit via a second wireless communication link.

16. Method according to claim 14, wherein each cell unit measures the physical parameters of a respective group of battery cells, the groups comprising at least one battery cell; wherein each battery cell belongs to at least two groups; wherein the measured values of the physical parameters of particular groups are subtracted from one another or otherwise processed for obtaining the physical parameters of individual battery cells.

17. Method according to claim 14, wherein a density or a fill level of electrolyte in the at least one battery cell is measured by detecting a change in an emitted electromagnetic signal.

18. Method according to claim 15, wherein signals are transmitted by at least one technique selected from the group consisting of: transmission of electromagnetic waves, inductive transmission, transmission of light, transmission of sound, and transmission of ac currents.

19. Method according to claim 14, wherein a charge balancing is performed to adapt charges of a plurality of battery cells to each other by temporarily establishing a current path between poles of the plurality of battery cells.